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MONTHLY on page 4 indicate confusion in the mind of the compiler and "Funkel" is given for "Finkel." On page 13, for "Férpussac" read "Ferussac." The entry "Notes in mathematics, 1905, 06, 12" under Johns Hopkins University is very misleading since these are only three of many such numbers in the *Johns Hopkins University Circulars* of which Brown University has practically a complete set. On page 19 it is stated that the first volume of the *Proceedings of the Edinburgh Mathematical Society* was published in 1883, when the correct date is 1894; volume two was published in 1884. *Revista Matematica hispano-americana* was not "continuing *Revista de matemáticas*, in Buenos Aires" (pages 49, 53).

In spite of its imperfections, however, the bibliographer and research student will be grateful for this valuable new aid in the promotion of their inquiries.

R. C. ARCHIBALD.

*Mathematics of Finance.* By H. L. RIETZ, A. R. CRATHORNE, and J. C. RIETZ. New York, Henry Holt and Company, 1921. 12mo. 13 + 280 pp. Price \$3.00.

Preface: "It is the main purpose of this book to present a teachable elementary course in the application of mathematics to a broad class of financial problems.

"The material for the book has been obtained from many sources and tested in the teaching of such courses at three large universities. Experience has shown that the material is especially adapted to the needs of the students in schools and colleges of commerce and business administration, although general liberal arts and engineering students also find the course of much value.

"The man with a liberal business education should surely be thoroughly and accurately trained in the operation of interest in relation to finance. This course is designed to supply such training. In particular, this book treats of the relation of interest to the amortization of debts, to the creation of sinking funds, to the treatment of depreciation, to the valuation of bonds, to the accumulation of funds in building and loan associations, and to the elements of life insurance.

"Three chapters are devoted to an introduction to the elements of the mathematics of insurance. This is not a technical actuarial treatment of insurance, but simply a sufficient introduction to insurance so that the general business man who studies the book may obtain proper quantitative knowledge about the first principles of life insurance; and, as a student, may come to appreciate the beautiful system of long time finance involved in legal reserve life insurance.

"For the study of the book, no mathematical preparation, except that usually included in the high school course, is absolutely necessary, but courses in freshman and even in sophomore college mathematics will be found very useful, especially if only a short time is devoted to the work on this book.

"The plan of the book is such as to afford much elasticity in the time required to cover the work with a class. This is accomplished in part by the inclusion of many applied problems that should be solved by students when this work is given as a full course of, say three hours per week for a year. When the work is given as a briefer course, many problems may be omitted. Indeed, the entire work beginning with the chapter on probability, or with the previous chapter on building and loan associations may be omitted, without destroying the continuity of the course. These omissions would make possible a very brief course. Answers are given to some of the problems to meet the needs of those teachers who find them useful.

"The necessary subjects in pure mathematics beyond the elements of algebra are given in the body of the text, in foot-notes or in special chapters at the end of the text. These final chapters are on logarithms and progressions. Students who have not studied these subjects will do well to take portions of these chapters first.

"Some rather complicated formulas are developed in the book. It is important to guard the student against the tendency to substitute half blindly in the formulas. In fact, it is one of the features of our treatment to stress the formulas which the student should think out from first principles rather than the formulas most convenient for substitution without thinking.

"From experience in teaching the subject, we feel justified in the view that the careful study of the course presented in this book will do much to create in the business student an appreciation of exact science in business."

Contents—Chapter I: Interest, 1–30; II: Annuities certain, 31–61; III: The sinking fund method of paying a debt by periodical instalments, 62–76; IV: Valuation of bonds and other securities, 77–106; V: Mathematics of depreciation, 107–134; VI: The operation of funds in building and loan associations, 135–152; VII: Theory of probability with special reference to its application in insurance, 153–171; VIII: Life annuities, 172–189; IX: Net premium for some simple forms of life insurance, 190–202; X: Valuation of life insurance policies, 203–217; XI: Logarithms, 218–242; XII: Progressions, 243–248; Tables, 251–275; Index, 277–280.

#### NOTES.

The last number of *Proceedings of the Royal Society*, series A, volume 99, published September 1, 1921, contains biographical notices of five deceased members. These include sketches of Robert Bellamy Clifton (1836–1921; compare 1921, 237) by R. T. G., vi–ix; of Srinivasa Iyengar Ramanuja Iyengar (1887–1920) by G. H. Hardy, xiii–xxix; and of Woldemar Voigt (1850–1919; compare 1921, 32) by H. L., xxix–xxx. Hardy's sketch of Ramanujan appears to be identical with the one which he published earlier in *Proceedings of the London Mathematical Society* (see 1921, 458).

Holland now publishes six mathematical journals, five of which are well known: *Nieuw Archief voor Wiskund*,<sup>1</sup> *Nieuw Tijdschrift voor Wiskunde*, *Revue Semestrielle des Publications Mathématiques*, *Wiskundige Opgaven met de Oplossingen*, and *Wiskundig Tijdschrift*. The sixth journal is a bimonthly periodical entitled *Christiaan Huygens, International Mathematisch Tijdschrift*, and the first number (64 pages) was published in October, 1921, by P. Noordhoff of Groningen who is also the publisher of the *Nieuw Tijdschrift*. It is planned that these periodicals shall be issued in alternate months (12 florins a year for the two; 8 florins for *Christiaan Huygens* alone). *Christiaan Huygens* is edited by Dr. F. Schuh, professor at the Technical University in Delft, with the collaboration of several others. The editors will accept articles (in English, Dutch, South-African, French, and German), which deal with topics of pure mathematics, mechanics, and mathematical physics. An honorarium of 20 florins per 16 pages is given for accepted articles. A few problems are also to be published in each number, the solutions appearing in subsequent issues. The standard of the publication is summed up in the announcement as follows: "In order to attract a wide field of readers and in that way to secure the largest useful result, the editors propose not to carry the contents to too high a level; it will have to remain largely within the field of study of doctors, doctorandi, engineers, and those who hold the diploma  $K_5$ ." (The  $K_5$ -diploma is a diploma held by those who are entitled to teach in the highest type of secondary schools.)

*Mathematical Philosophy, a Study of Fate and Freedom* is the title of a new series of lectures by C. J. KEYSER, crown 8vo, cloth, \$4.20, published by E. P.

<sup>1</sup> This is the leading Dutch mathematical journal. It began as *Archief, uitgegeven door het Wiskundig Genootschap* in 1856; the third, and last, volume of this series was completed in 1875. The first volume of *Nieuw Archief voor Wiskunde* was started in 1875.